

RECYCLING EFFORTS

This section highlights the commodities that make up municipal solid waste (MSW) as defined by South Carolina. These commodities also form the basis for many of the state's recycling programs and the amounts collected are used to calculate the state's recycling rate.

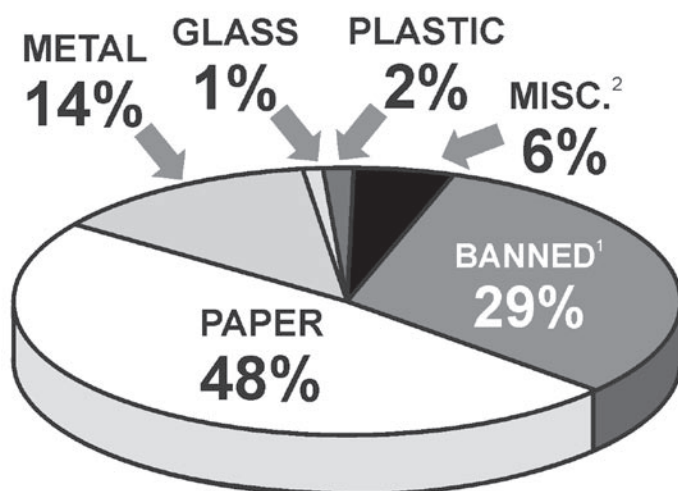
For each commodity, a definition and description are given, the recycling tonnages are provided for the past five years and an interpretation of the amount recycled in fiscal year (FY) 2004 is offered.

In addition, a chart showing the average price received for each commodity or subgroup in FY04 is provided. Again this year, pricing information was obtained from the progress reports submitted by counties. Between four and 10 counties, depending on the particular commodity, shared information on market prices. Various factors – quantity, quality, location and infrastructure – determine market prices.

Of the six categories that make up MSW (glass, metal, paper, plastic, banned and miscellaneous), only two (glass and paper) saw an increase in tonnages from FY03.



CHART 3.1: Recyclables Collected in South Carolina by Percentage*



1. Banned items include the following: appliances; lead-acid batteries; tires; yard trimmings; and land-clearing debris. While used oil also is a banned item, it is not considered MSW, and as such, used oil recycling is measured separately and can not be counted as part of the state's recycling rate.
2. Miscellaneous items include: antifreeze; consumer electronics; cooking oil; fluorescent bulbs; food waste (post-consumer only); hazardous household materials; latex paint; mattresses; textiles; used oil filters; wood packaging; other wood (such as furniture and cabinets); and other non-packaging products.

*COMMODITIES MEASURED BY WEIGHT

COMMODITY: GLASS

For the first time in three years, the amount of glass recycled increased in FY04 with 10,497 tons collected. While 90 percent of the glass recycled came from residential programs – both curbside and drop-off – a significant portion of the increase came from commercial businesses. This exemplifies the importance of businesses reporting their recycling efforts. In fact, all three colors of glass – brown, clear and green – saw an increase in FY04.

In addition, there also was a slight increase in the residential category. This can be directly correlated to the addition of glass to two county's recycling programs. Overall, 33 counties collect glass and of those only three do not collect green glass.

There are six counties that serve as host sites for glass collection. This allows smaller communities that don't generate a large enough volume to directly market it themselves to combine their glass with other programs. Currently, Darlington, Georgetown, Hampton, Horry, Lexington and York counties provide this host service.

Glass prices changed some over the past year with both clear and brown down slightly. And while it appears in Chart 3.4 that green glass has some value, it is worth noting that there is value only because some counties sell glass commingled for \$5 per ton, rather than separating the colors and trying to get a better price for clear and brown.

"South Carolina's supply of glass cullet has been stable and of good quality," according to the S.C. Recycling Market Development Advisory Council's

(RMDAC) 2004 Annual Report. "Fibres International says its South Carolina depot locations have been its most improved supply base, delivering increased volumes over 2003. Markets for all three colors are strong with most bottles being made going to the breweries throughout the Southeast."

For recycling purposes, glass is defined as containers like bottles and jars for drinks, food, cosmetics and other products. When recycled, container glass usually is separated into colors for conversion into new containers, construction materials or fiberglass insulation. This category does not include glass from windows, plates and drinking glasses.



CHART 3.3: Total Glass Recycled in Tons

	FY04	FY03	+/-
Brown	2,574	2,152	+422
Clear	3,081	2,713	+368
Green	2,661	1,339	+1,322
Mixed	2,181	3,226	-1,045
TOTAL	10,497	9,430	+1,067

CHART 3.2: Glass Recycling Figures by Year

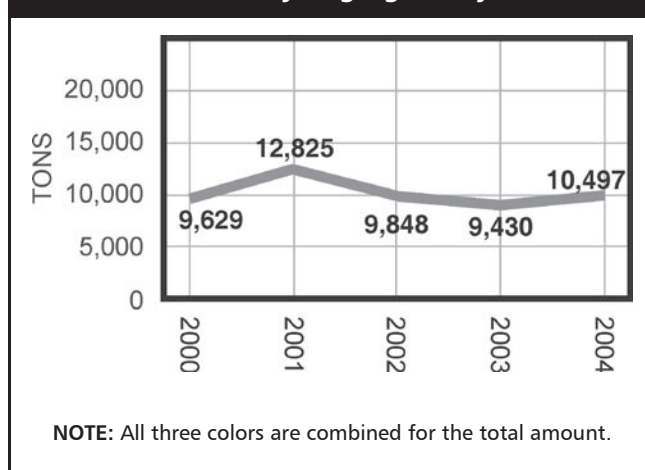
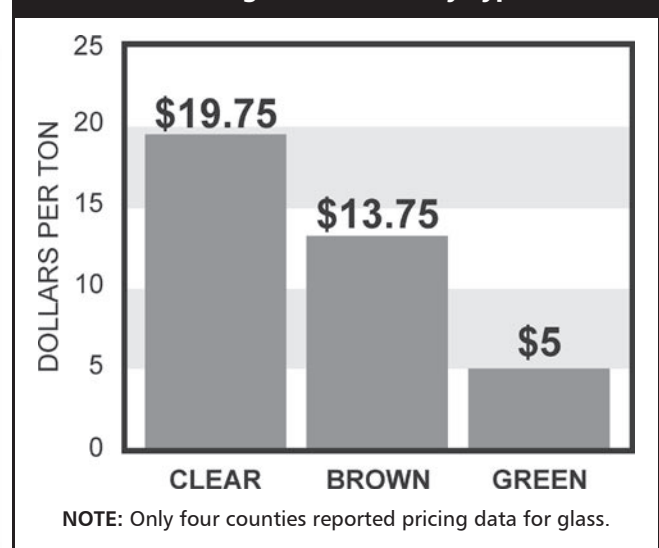


CHART 3.4: Average Glass Prices by Type



COMMODITY: **METAL**

Metals saw an across the board decrease in each category for FY04, falling 73 percent to 135,980 tons. This is a direct result of the meetings held by the S.C. Department of Health and Environmental Control (DHEC) to assist recycling coordinators to better define what can and cannot be included as MSW recycling activities. As a result, many metals once counted – including those from industrial or construction and demolition activities as well as auto bodies – are no longer included in this report.

And while this is a significant decrease, it is more accurate in reflecting the MSW recycling efforts that are taking place across the state. Another reason for the decrease was a one-time event included in last year's figure. There was speculation about whether or not it would happen again in FY04. Clearly, it did not.

Another cause for the across-the-board drop in the metals category was the fact there was a significant amount reported in an incorrect category in FY03 that was changed in FY04.



CHART 3.5: Total Metal Recycled in Tons

	FY04	FY03	+/-
Aluminum	8,626	15,653	-7,027
Steel	11,937	13,357	-1,420
Ferrous	66,337	143,610	-77,273
Non-ferrous	6,084	9,939	-3,855
Other or Scrap	42,996	97,275	-54,279
Mixed Metal	0*	178,034	-178,034
All Metal	0*	49,330	-49,330
TOTAL	135,980	507,198	-371,218

*Categories eliminated for FY04 SWM Report.

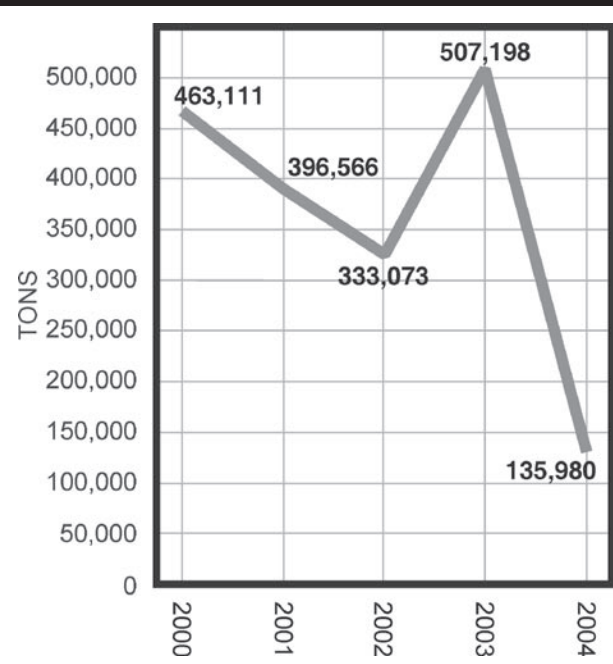
Despite the decrease in tons collected, a record 45 counties accepted some type of metal in their recycling program, whether it was steel and aluminum cans, scrap metal, strapping or even aluminum foil and lids. More than one-fourth of all metals recycled came from residential programs.

Interestingly, there was an upswing in metal pricing, reflecting increases in both aluminum and scrap metal from the year before. This commodity tends to be fairly easy to collect (although space can be an issue at some recycling centers) and the market for metal has been solid, especially considering there are several metal recyclers located in South Carolina.

Ferrous metals are magnetic and are derived from iron or steel; products made from ferrous metals include appliances, furniture, containers and packaging like steel drums and barrels. Recycled products include steel cans, strapping and metals from appliances.

Non-ferrous metals are non-magnetic metals such as aluminum, lead and copper. Products made, all or in part, from such metals include containers, packaging, furniture, appliances, electronics and aluminum foil.

CHART 3.6: Metal Recycling Figures by Year



More About Aluminum Cans...

The total amount of aluminum recycled fell from 15,635 tons in FY03 to 8,626 tons in FY04. In addition, aluminum recycling in the residential category also fell from 2,538 tons in FY03 to 1,675 tons in FY04.

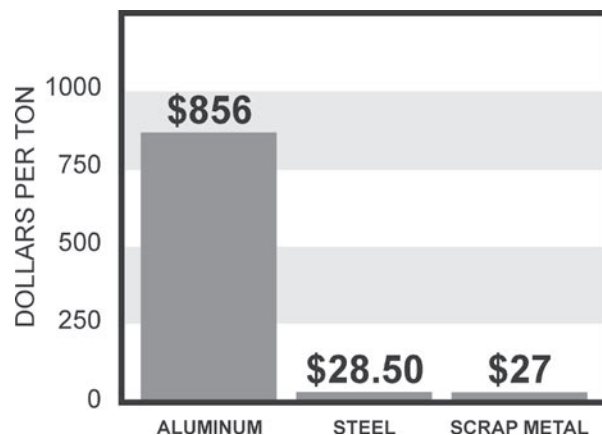
While overall aluminum recycling dropped by more than half, the numbers may not tell the whole story.

Aluminum cans are the most recycled consumer product in the United States today. One reason for that honor is the fact that aluminum cans are the most valuable container to recycle. Each year, the aluminum industry pays out more than \$750 million for empty aluminum cans according to The Aluminum Association. That money goes to all kinds of organizations including Habitat for Humanity, Boy and Girl Scouts and schools. In South Carolina, one example of a similar program is the statewide effort by the Aluminum Cans for Burned Children program run by the Medical University of South Carolina.

Because aluminum cans collected by these programs do not go through local government recycling centers, the amount of cans collected generally remains unknown. Increasingly more organizations are looking to aluminum can recycling as a fund-raiser. This type of recycling effort may be one of the reasons for the decrease in the overall numbers. Again, this decrease does not mean less recycling, but rather efforts that are not captured for the state's MSW recycling rate.



CHART 3.7: Average Metal Prices by Type



NOTE: Between four and 10 counties reported pricing data for metal.

COMMODITY: **PAPER**

The amount of paper recycled increased by 24 percent in FY04 to 460,477 tons. The increase, which ended five consecutive years of declining totals, came from industry, schools and commercial businesses. In contrast, the residential category tonnages for FY04 were down, but by less than 1,500 tons.



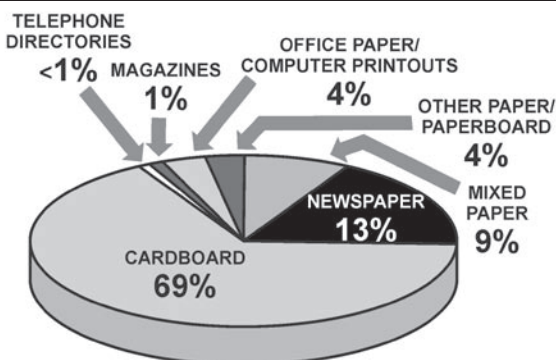
Clearly, the driving force behind the successful recycling of paper is the number of schools, industry and commercial businesses that are keeping paper goods out of the landfill and earning revenue on the material collected. According to RMDAC, another reason for paper's increased recycling rate could be the export demand, as markets in Asia and India continue to grow. The rest of the world continues to look to the United States to provide their needed fiber supply and this will play a major role in maintaining strong pricing.

Cardboard was the No. 1 recycled item followed by newspaper and mixed paper. In FY04, 40 of the state's 46 counties reported recycling cardboard and/or newspaper. Of those 40 counties, 36 also accepted office or mixed paper in their residential programs.

Overall, the amount of newspaper recycled grew from 56,277 tons in FY03 to 62,880 tons in FY04 – a 12 percent increase. The residential collection of newspapers also grew – by about 1,250 tons.

In fact, the only decrease came in the "Other Paper" category, which probably better reflects that the paper is separated and marketed for better prices and included in specific paper categories.

CHART 3.8: Types of Paper Recycled



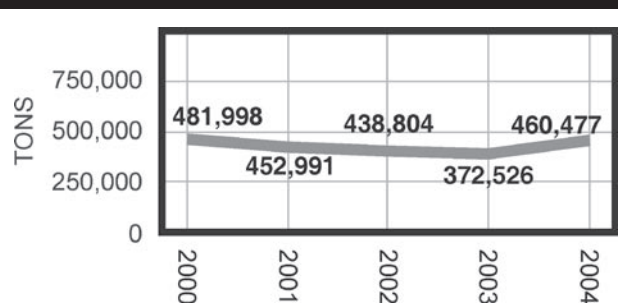
NOTE: The total amount of MSW paper recycled in FY04 was 460,477 tons. This chart is a breakdown of that total (measured by weight).

CHART 3.9: Total Paper Recycled in Tons

	FY04	FY03	+/-
Cardboard	317,745	245,398	+72,347
Magazines	4,837	2,235	+2,602
Newspaper	62,880	56,227	+6,653
Office Paper	16,680	16,173	+507
Mixed Paper	40,084	26,370	+13,714
Telephone Directories	639	210	+429
Other Paper	17,612	19,437	-1,825
All Paper	0*	6,476	-6,476
TOTAL	460,477	372,526	+87,951

*Category eliminated in FY04.

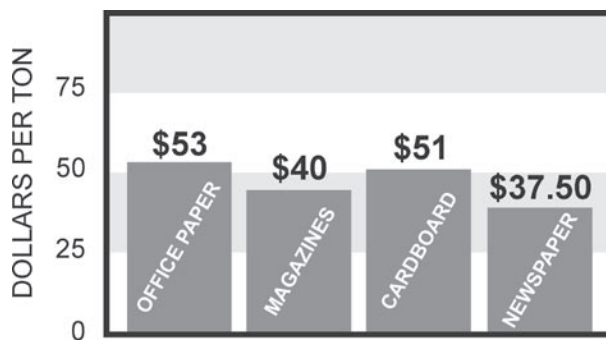
CHART 3.10: Paper Recycling Figures by Year



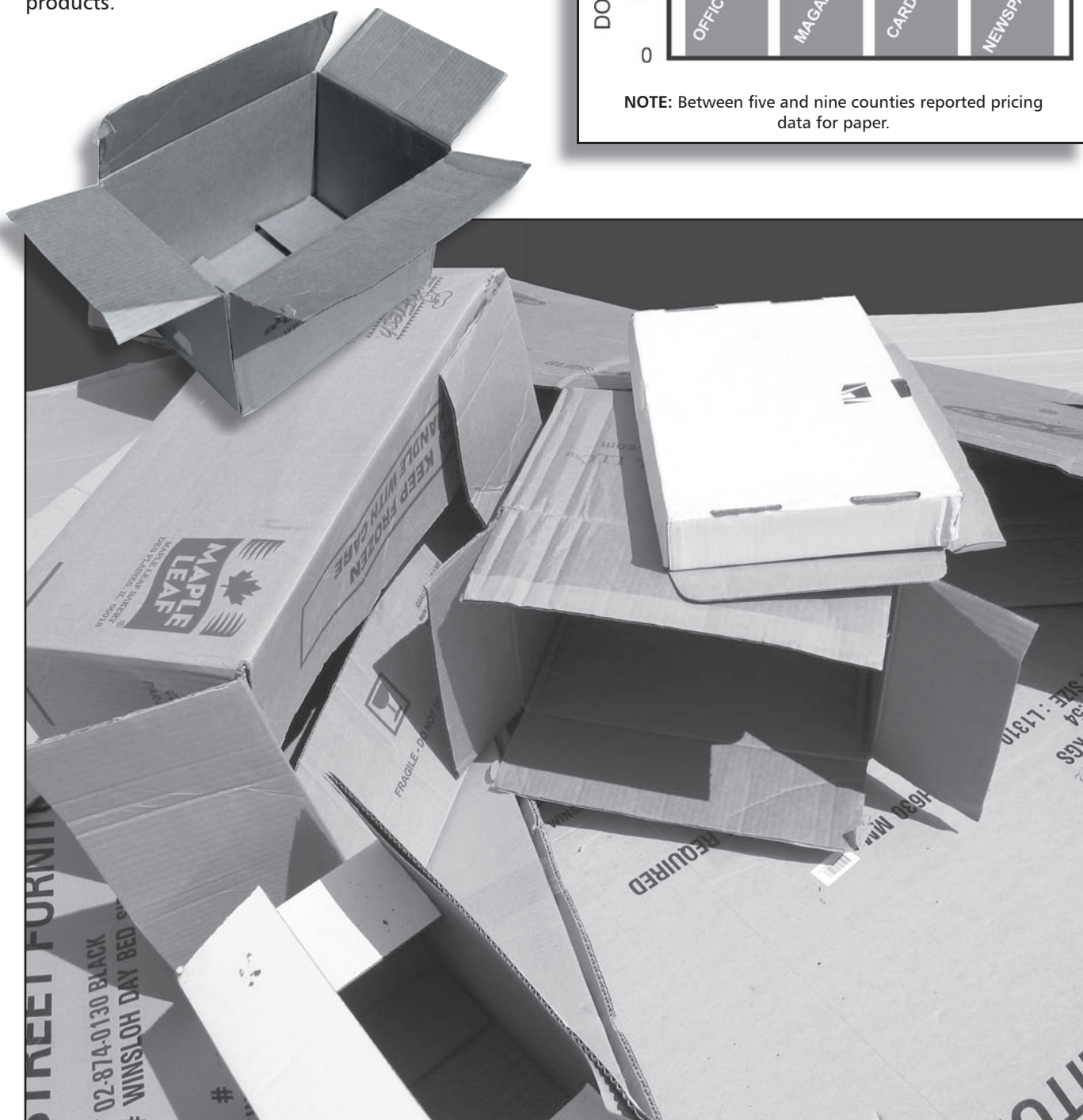
The value of cardboard significantly increased to \$51 per ton, up \$21 from FY03, while office paper was lower than FY03 but not enough to negatively influence the amount of material being recycled (see Chart 3.11 for more information).

In the recycling business, paper refers to products and materials including newspapers, magazines, office papers, cardboard, bags and some paperboard packaging that can be recycled into new paper products.

CHART 3.11: Average Paper Prices by Type



NOTE: Between five and nine counties reported pricing data for paper.



COMMODITY: **PLASTIC**



The amount of plastic recycled fell slightly in FY04 to 16,020 tons from 16,328 tons the previous FY.

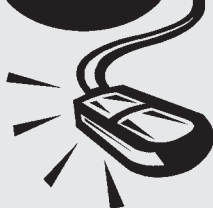
Of the total, roughly one-third of the plastic recycled came from curbside or drop-off programs.

Of the 38 counties that reported collecting and plastic, six of them also collected -. See page 20 for a complete description of all plastic.

Plastic recycling presents several unique challenges compared to other traditional recyclables. First, the sheer volume of products and packaging made from plastic continues to grow. Second, the use of single-serve containers continues to increase and the use of these containers away

from home clearly presents a barrier to recycling. Third, the economics of recycling are not always favorable. It can be very expensive to haul plastics because of their light weight.

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For more information about recycling markets for different materials, see the "Index of Waste Minimization Resources" at www.scdhec.gov/eqc/admin/html/wmrindex.html or call RMDAC at (803) 737-0477.

Still, there are markets for plastic. According to most industry experts, companies that need plastic are facing a shortage.

Chart 3.13 showcases that, when enough plastic is collected and baled, plastic has value. Both PET and natural HDPE saw a slight price increase over last year.

When measured for recycling, plastic refers to containers and packaging made from various resins but does not include the plastic in automobiles

CHART 3.12: Plastics Recycling Figures by Year

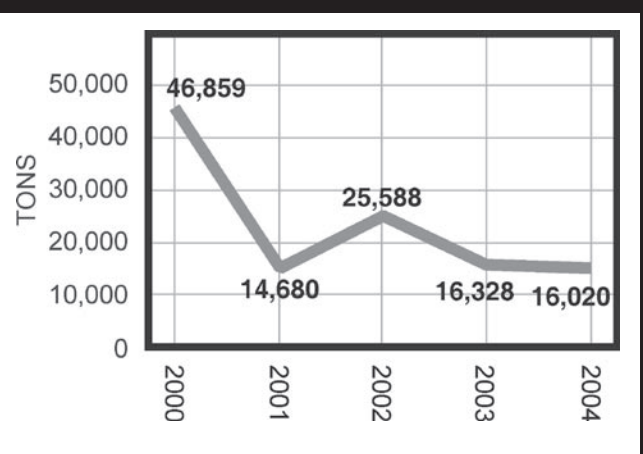
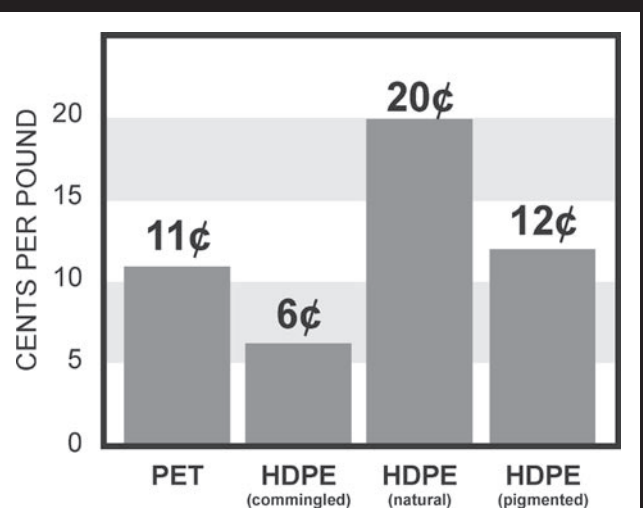


CHART 3.13: Average Plastics Prices by Type



NOTE: Only seven counties reported pricing data for plastics.

and construction products like Polyvinyl Chloride (PVC) piping. Two types of plastic, Polyethylene Terephthalate (PET) and High Density Polyethylene (HDPE) are the most commonly recycled plastic in the state and nation.

Identifying Plastics
















One of the other difficulties in recycling plastic is the fact that products and packaging are made from different kinds of plastic. Of course, 95 percent of all bottles are made from either PET  (also known as PETE) or HDPE , more commonly recognized as soft drink, mouthwash, milk and laundry detergent containers. Some other plastics that also are recycled include Vinyl (PVC ) used in clear food packaging and medical tubing, Low Density Polyethylene (LDPE ) used in bread, dry cleaning and squeezable bottles, Polypropylene (PP ) used in yogurt cups and margarine tubs; Polystyrene (PS ) used in grocery store meat trays and egg cartons; and Other  that contains a combination of the first six types of plastic resin.

CHART 3.14: Total Plastics Recycled in Tons

—	TYPE	FY04	FY03	+/-
	PET	2,201	2,144	+57
	HDPE	5,651	3,418	+2,233
	HDPE (Oil Bottles)	255	124	+131
—	PET and HDPE	1,115	2,699	-1,584
	V or PVC	424	412	+12
	LDPE	1,390	603	+787
	PP	1,452	1,451	+1
	PS	455	477	-22
	Other	3,077	5,000	-1,923
	TOTAL	16,020	16,328	-308

COMMODITIES: **BANNED & MISCELLANEOUS ITEMS**

BANNED ITEMS are those that cannot be disposed of in South Carolina's MSW landfills by law. These include lead-acid batteries, tires, large appliances (also known as white goods), yard trimmings and land-clearing debris. While used oil also is a banned item, it is not considered MSW and is measured separately. See page 22 for a detailed summary of South Carolina's successful used oil recycling program.

While banned items usually are not collected in curbside programs, most can be taken to county drop-off centers for recycling or to retailers when new products are purchased. Chart 3.15 shows a breakdown of the tonnages recycled for each commodity in FY03 and FY04 for comparison.

With the exception of yard trimmings and land-clearing debris, there are advance recycling fees associated with banned materials. When consumers buy motor oil, new tires, refrigerators (or other large appliances) and car batteries, they pay a small fee that is set aside in Solid Waste Trust Fund to help pay for recycling programs across the state. These fees have helped develop and maintain curbside and drop-off collection sites located throughout the state as well as outreach and education efforts and programs.

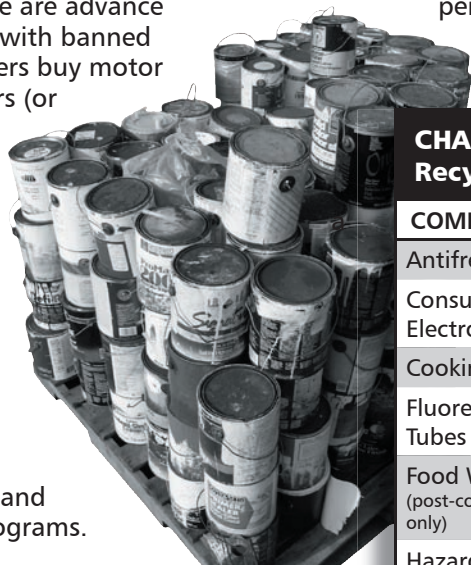


CHART 3.15: Total Banned Items Recycled in Tons

	FY04	FY03	+/-
Lead-acid Batteries	7,463	7,101	+362
Tires	27,322	29,774	-2,452
White Goods	56,098	36,399	+19,699
Yard Trimmings and Land-clearing Debris	189,562	235,210	-45,648
TOTAL	280,445	308,484	-28,039

While there was an increase in white goods and lead-acid batteries, there was a 9 percent decrease overall in banned items. Most of this decrease comes from yard trimmings that in the past inadvertently included debris from ice storms and hurricanes that is not, by definition, considered MSW.

MISCELLANEOUS ITEMS are considered non-traditional recyclables that are not disposed of in a MSW landfill but instead are recycled. Generally, they do not fall under any other category in the annual report. These are items that counties recycle based upon local and sometimes unique markets.

And while it is difficult to offer some comparison, it is worth noting that local and statewide efforts to increase recycling of certain materials has been extremely successful, with more than triple-digit percentage increases in antifreeze, cooking oil, hazardous household materials and fluorescent lamps.

CHART 3.16: Total Miscellaneous Items Recycled in Tons

COMMODITY	FY04	FY03	+/-
Antifreeze	1,516	746	+770
Consumer Electronics	379	134	+245
Cooking Oil	4,746	52	+4,694
Fluorescent Tubes	2,761	1,105	+1,656
Food Waste (post-consumer only)	946	3,426	-2,480
Hazardous Household Materials	999	21	+978
Latex Paint	172	116	+56
Mattresses	98	32	+66
Textiles	10,744	54,629	-43,885
Used Oil Filters (if not included as scrap metal)	948	812	+136
Wood Packaging	38,519	25,906	+12,613
Other Misc.	66	0	+66
Other Wood	603	17,168	-16,565
TOTAL	62,497	104,147	-41,650

COMMODITIES: **USED MOTOR OIL**

South Carolina continues to have one of the nation's best and most comprehensive used oil recycling programs targeted at do-it-yourself (DIYers) oil changers.

The statewide effort, partially funded by a DHEC grant program, helped DIYers recycle 1,142,199 gallons of used oil in calendar year 2003 at more than 700 collection sites throughout the state – the fifth consecutive year more than 1 million gallons of used oil was recycled. Since 1990, DIYers have recycled more than 10 million gallons of used oil.

The program, which has been developed by the Office, has grown into a one-stop shop for DIYers. In addition to collecting used oil, most of the state's 46 counties also collect and recycle used oil filters and used oil bottles from DIYers. The Office collects the amount of used oil filters and used oil bottles recycled, but counties often add filters to their metal recycling and bottles to their plastic recycling.

The Office encourages counties to establish farmer oil collection tanks as well as oil/gasoline mixture tanks. Farmer oil collection tanks are designed to accept the larger quantities of oil that farmers generate. Since the program began in 1998, 24 farmer oil tanks

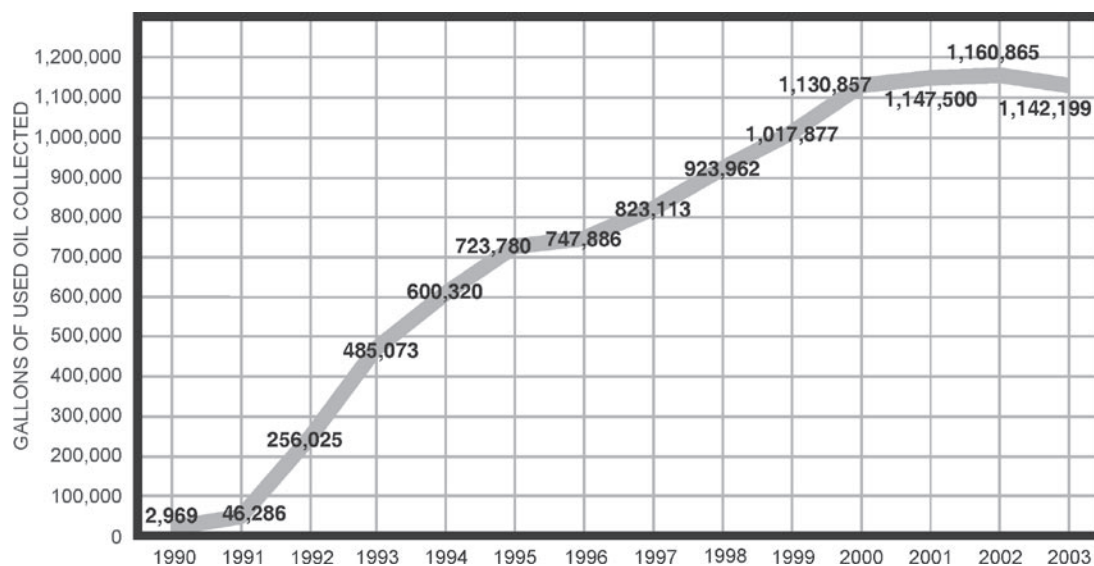
have been set up in 21 counties. Oil/gasoline mixture tanks are designed to accept oil, gasoline and oil/gasoline mixtures. Nineteen oil/gasoline mixture collection sites have been established in 17 counties.

Overall, there are few barriers to the recycling of used oil, used oil filters and used oil bottles. Markets are not an issue. Santee Cooper picks up used oil from local programs at no charge. Bottles, if properly drained, can be placed with other plastic for recycling. Local scrap dealers and steel mills accept used oil filters.

While the overall used oil program continues to be successful, the Office's goal is to have at least one farmer oil collection tank and one oil/gasoline mixture tank in each county as well as have each county collect used oil filters and bottles.



CHART 3.17: Used Motor Oil Collection Figures by Calendar Year



NOTE: Used oil is not considered MSW and as such used oil recycling is measured separately and can not be counted as part of the state's recycling rate. Used oil recycling sites are required by law to be registered with the state. Collection figures were taken from reports compiled and provided by Santee Cooper and DHEC's Office of Solid Waste Compliance. Figures for calendar year 2004 were not available when this document was printed.

COMMODITIES: **STATE AGENCIES, COLLEGES & UNIVERSITIES**

The S.C. Solid Waste Policy and Management Act of 1991 (Act) was amended in October 2000 requiring state agencies as well as colleges and universities to report to DHEC their waste reduction, recycling and buying recycled activities for the previous FY by September 15 each year.

In turn, DHEC is required to compile all of the reports into one comprehensive document and submit that report to the Governor and Legislature by November 1 each year. "The State Agencies/Colleges and Universities Waste Reduction, Recycling and Buying Recycled Report" has been published annually since FY01 (July 1, 2000 to June 30, 2001).

In FY04, 69 state agencies and 30 colleges and universities reported the required recycling information (see Chart 3.18). State agencies recycled 267,817 tons of materials (an increase of more than 90,000 tons from the previous FY). Of that amount, only 6,800 tons could be considered MSW. Colleges and universities and other educational entities recycled 6,187 tons of materials (an increase of more than 2,200 tons from the previous FY). Specifically, each state agency is required to: measure materials being recycled; measure the purchases of recycled-content products; and identify waste reduction practices.

Overall, more than 274,000 tons of materials were recycled – a 51 percent increase from the previous FY. It must be made clear that fly ash recycled by Santee Cooper and reported in the "Other" category accounted for virtually all of the increase. Additional materials recycled that are part of the "Other"

category include printer cartridges, tires, rags, utility poles, chemicals, cooking oil, ballasts, antifreeze, fly ash, VHS tapes, concrete and construction and demolition debris.

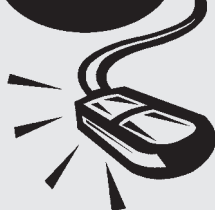
Fly ash, construction and demolition debris and some other materials recycled could not count toward South Carolina's recycling rate because they are not defined MSW. But none of the materials recycled by state agencies counted as part of the state's recycling rate (refer to page 8 of the Overview for more information).

The MSW recycled by colleges and universities counted towards the state's recycling rate and is included in this report.

CHART 3.18: Recyclables Collected in Tons

COMMODITY	STATE AGENCIES	COLLEGES/ UNIVERSITIES
Aluminum/ Aluminum cans	60	23
Batteries (lead/ rechargeable)	141	3
Books	2	43
Cardboard	902	725
Computers	23	231
Fluorescent tubes	7	23
Food waste	0	0
Furniture	0	0
Glass	1	30
Magazines	47	21
Newspaper	94	71
Oil	945	38
Oil filters	38	2
Other	259,974	2,951
Pallets	103	37
Paper	1,566	1,434
Phone books	34	20
Plastic	12	43
Steel	3,868	416
Yard trimmings	0	76
TOTAL	267,817	6,187

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"The State Agencies/ Colleges and Universities Waste Reduction, Recycling and Buying Recycled Reports" are available at www.scdhec.gov/recycle/html/pubs.html.

